Homework Assignment IV

Physics 105.2, Instructor: Petr Hořava

This assingment is due Friday, Feb 28.

This week we have been playing with some simple oscillators, folllowing Chapter 3 of Hand-Finch. Despite their simplity, these systems are extremely important, since they universally appear in linearized approximations to the dynamics of systems near static equilibrium.

The required reading for this week is Chapter 3.1-3.7 of Hand-Finch, plus of course the part at the end of Chapter 3 called "problems" :-)

Here are this week's problems. I believe that by now every student has unconstrained access to Hand-Finch, therefore I will only refer to problems from Hand-Finch by their numbers and will not copy the text of the problem here.

1. *(Bead on a rotating hoop)*: Hand-Finch, Problem 2(a) and 2(b) from Chapter 3 (begins on page 114).
   This problem, and the following one, are in fact a continuation of the first problem from last week's assignment.
2. *(Bead on a rotating hoop – continuation)*: Hand-Finch, Problem 2(c) and 2(d) from Chapter 3 (on page 115).
3. *(Second solution for critical damping)*: Hand-Finch, Problem 9 of Chapter 3 (on page 117).
4. *(Pulse driving force)*: Hand-Finch, Problem 16(a) of Chapter 3 (on page 119).
5. *(Pulse driving force – continuation)*: Hand-Finch, Problem 16(b) of Chapter 3 (on page 119).

For extra credit of 2 points you can voluntarily solve parts (c) and (d) of Problem 16 of Chapter 3 of Hand-Finch.